

THE AUSTRIAN METEOROLOGICAL SERVICE.

The following letter was recently received at the central office of the United States Weather Bureau:

[Translation.]

ZENTRALANSTALT FÜR METEOROLOGIE UND GEODYNAMIK, WIEN XIX.
HOHE WART 38.

WIEN, am 2. Dezember, 1920.

The Zentralanstalt für Meteorologie und Geodynamik in Vienna is one of the oldest meteorological institutions in the world. Upon the suggestion of the Vienna Academy of Sciences it was founded in the year 1851 by the Austrian State to cultivate meteorology and terrestrial magnetism, and has served science as well as practical life for 70 years.

The results of the war and the subsequent peace now place its further activities in question. The impoverished little Austrian Republic lacks the means which are requisite for carrying on the work of the Zentralanstalt.

The undersigned, the former and the present director of this old institution, feel bound to notify the meteorological institutes, societies, and scientists of the world, which stand in relation, on account of scientific or practical interests, with the Zentralanstalt in Vienna and exchange publications with it, of the urgent distress of the institution.

They proceed for that purpose on the supposition that a scientific institution like the Zentralanstalt is, to a certain degree, the property of all cultivated nations of the world, and all are interested in its existence.

The undersigned, in view of these considerations, are making a plea for funds with which to maintain the Zentralanstalt. The low value of the Austrian crown (a little less than 2 Swiss centimes) makes it on the one hand, easy for foreign countries to help, but on the other hand, makes the endowment, provided by our own State, although it has been increased, seem more and more inadequate.

From now on it is impossible for the Zentralanstalt to publish its yearbooks, even for diminished Austria, although the yearly expenses of printing to-day amount to only 1,000 Swiss francs. The yearbook on account of the results of observations, and other information which they contain, furnish the basis for the development of our science.

In other respects, also, the Zentralanstalt can not possibly maintain its work. The purchase of instruments has become impossible, the hydrogen for pilot balloons, and the rubber balloons for sounding-balloon ascents, are too dear; also the library can not be supplied, as the smallest foreign books or journals cost hundreds of crowns. Consequently the foreign works on meteorology can not be studied and we remain behind the times. The weather map can still be issued a half-year longer, until the stock of paper is exhausted, then that must also cease. The earthquake station in Vienna is still maintained with difficulty, the stations in Graz and Innsbruck must, on the contrary, be discontinued, as the expenses are too great. It is out of the question to resume the observations in terrestrial magnetism which before the war were registered at the high station on the Obir. Wherever one looks, everywhere there prevails the same wretched collapse of our work.

The undersigned refrain from mentioning the rôle which the Austrian school of meteorology has played in the last 50 years. They permit themselves only to name some books which have been issued from the Vienna Zentralanstalt:

Meteorologische Zeitschrift, since 1866; J. Hann, Handbuch der Klimatologie; J. Hann, Lehrbuch der Meteorologie; J. M. Pernter, Meteorologische Optik; W. Trabert, Lehrbuch der kosmischen Physik; F. M. Exner, Dynamische Meteorologie.

May our foreign colleagues be reminded by these book titles of the Zentralanstalt für Meteorologie in Vienna, and assist in its preservation.

Most respectfully,

F. M. EXNER,
The Present Director.
J. HANN,
The Former Director.

SYSTEMATIC PHOTOGRAPHY OF THE AURORA.

[Reprinted from *Scientific American*, New York, Jan. 15, 1921, p. 43.]

The work of Prof. Carl Störmer, in Norway, in making simultaneous photographs of the aurora at two or more stations in order to determine its exact altitude and position in space has now developed to such an extent that, during the remarkable display of March 22-23, 1920, seven stations connected by telephone were in operation:

viz, Bygdo (Störmer's home), Oscarsborg, Horten, Christiania, Königsberg, Fredrikshald, and Dombaas. The distances between stations range from 26 to 80 kilometers. During the years 1911-1920 the stations at Christiania and Bygdo have made more than 300 successful pairs of simultaneous pictures, besides about 200 single pictures. Many fine photographs—single, double, and triple—were secured of the aurora above mentioned. Several single photographs were made of some wonderful blue rays, which formed a "corona" of dazzling brilliancy, and which were so intense that they were photographed, with an exposure of less than a second, after the dawn had so far advanced that first-magnitude stars were barely visible. Prof. Störmer reports that preliminary measurements of his photogrammetric pictures indicate, for the upper limit of the auroral rays in the recent display, an altitude of the order of 500 kilometers (310 miles). No aurora had previously been photographed above about 300 kilometers (186 miles).

REPORT ON THE ASTROPHYSICAL OBSERVATORY FOR THE YEAR ENDING JUNE 30, 1920.

By C. G. ABBOT, Director.

[Reprinted from the Smithsonian Report for 1920, pp. 90-95.]

Seldom is so much of scientific interest included in six pages of an annual report as is to be found in the above. For example, there is a paragraph on "Agreement of Mount Wilson and Chilean Work," and another on "Solar variation confirmed by observations of Saturn." In the discussion of this latter, two hypotheses are advanced relative to the nature of solar variation: (1) "The sun might vary in such a manner that its changes would be observed simultaneously in all directions and so would occur on identical days on all the planets." (2) "On the other hand, the solar radiation may be unequal in different directions."

These irregularities are attributed to unequal absorption or scattering of the rays in the coronal regions near the sun. Or to state it in another way, clouds that absorb or diffuse the solar rays by varying amounts are continually passing in the coronal regions between us and the radiating surface of the sun. The latter may therefore alternately present to us a surface that is relatively clear and hot or clouded and cool. It is only by accepting this second hypothesis that the variations observed in the solar constant and in the brightness of Saturn can be made to synchronize.

It is a matter of regret that volume IV of the *Annals of the Observatory*, which contains details of what is here merely mentioned, awaits the appropriation of funds for its publication.

There is also reference to "The honeycomb pyranometer," an instrument of the black-body type, for measuring the so-called "nocturnal radiation," and to experiments on the constant of radiation, "sigma."

Finally, the steps are narrated that have made it possible to move the Chilean observing station from a plain near Calama to a near-by mountain site, and to establish a new observatory in the Harqua Hala Mountains, near Wenden, Ariz. Again it is a matter of regret that insufficient funds render the maintenance of these two important observations possible only at great personal sacrifice on the part of Dr. Abbot and his assistants, sacrifices that few are willing to make except under the stimulus of anticipated important achievements.